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| 10/060,486 | 01/30/2002 | Min-Hee Cho | 5649-915 | 6925 |

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EXAMINER

KILDAY, LISA A

ART UNIT PAPER NUMBER

2829

DATE MAILED: 07/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/060,486

Applicant(s)

CHO ET AL.

Examiner

Lisa A Kilday

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on election on 6/9/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 2-8 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 10-12 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Election/Restrictions

Applicant's election with traverse of species A1B1C1D1E1F1G1H1I1J1K1L1M1 in Paper No. 7 is acknowledged. The traversal is on the ground(s) that claim 1 is generic. This is not found persuasive because applicant elected a species found in claim 9-12, & 14. If claim 1 is found allowable, all the dependant claims 2-14 will be rejoined and also allowed.

The requirement is still deemed proper and is therefore made FINAL.

Claims 2-8, 13 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 11, & 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hwang (KR-1996-035818). Hwang teaches forming an SOG layer (14) on an integrated circuit substrate; performing a first curing process on the SOG layer (claim 3); performing a second curing process after removing the SOG (14); and removing the remaining portion of the SOG to expose the integrated circuit substrate (fig. 2).

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In re claim 11, Hwang teaches a first and second curing process. The examiner takes official notice that it is well known to cure using H₂O, O₂, H₂, NO₂, or a mixture of gases as an atmospheric gas.

In re claim 14, Hwang teaches that the mask pattern. Hwang does not teach that the mask pattern is polysilicon, Al₂O₃, AlN, or SiN. The examiner takes official notice that mask patterns are frequently formed from polysilicon, Al₂O₃, AlN, or SiN.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang in view of Park (KR-1996-035821). Hwang teaches a first and second curing process. However Hwang fails to teach that the second curing process is at a temperature in a range of between 400-800C for a time of between 10 minutes to 1 hour. However, Park teaches a first and second curing process (claim 1) on the SOG layer (14) at the temperature of 400-450C (claim 7). Due to the translation, it is unclear whether Park teaches that the second curing process is between 10 minutes to 1 hour (claim 7). Therefore, it would have been obvious to one skilled in the art to cure the SOG layer during the second process at a temperature in the range of 400-800C for about 10 minutes to 1 hour in order to form a contact hole. The duration is also obvious due to routine optimization.

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In re claim 12, Hwang teaches a second curing process, however Hwang fails to teach that the thickness of the remaining portion of SOG is adequate enough to prevent oxidation. However, Park teaches that the SOG layer (14) is formed and cured to prevent oxidation between metal layers (abstract). Therefore, it would have been obvious to one skilled in the art at the time of invention to form SOG with an adequate thickness to prevent oxidation in order to prevent OH radicals from discharging from the SOG layer and prevent holes.

Allowable Subject Matter

Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0957. See MPEP 203.08.

Any inquiry concerning this communication from the examiner should be directed to Lisa Kilday whose telephone number is (703) 306-5728. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo, can be reached on (703) 308-1233. The fax number for the group is (703) 305-3432. MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

Lisa Kilday

LAK

7/3/03


EVAN PERT